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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/579,553	05/16/2006	Narinder Singh Bains		3960

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UNITED KINGDOM

EXAMINER

LE BOULLUEC, MICHAEL E

ART UNIT	PAPER NUMBER
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4146

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/579,553	Applicant(s) BAINS, NARINDER SINGH	
	Examiner MICHAEL LE BOULLUEC	Art Unit 4146	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 May 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 May 2006 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Priority

1. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). The certified copy has been filed in parent Application No. 10/579553, filed on 16 May 2006.

Specification

2. The specification is objected to because on page 4, the first differential and second differential are defined as being the same variable "the rate of change of the pressure of the gaseous fraction with incremental changes in volume v". The first and second differentials are well known to one of ordinary skill in the art of volume measuring devices and correction is required. See MPEP § 608.01(b).

Claim Objections

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2-7 are objected to because of the following informalities:

- "A device" should be - The device -.

Appropriate correction is required.

Claim 1 is objected to because of the following informalities:

- "gas" should be - a gas -;
- Second bullet, "changes if volume" should be - changes of volume -.

Appropriate correction is required.

Claim 7 is objected to because of the following informalities:

- "including a piston" should be - including the piston -.

Appropriate correction is required.

Claim 8 is objected to because of the following informalities:

- Second bullet, "with respect to the volume" should be - with respect to a volume -;
- Second bullet, "changes if volume" should be - changes of volume -.

Appropriate correction is required.

Claim 9 is objected to because of the following informalities:

- "a method" should be - the method -.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Alber (US Patent 5450750).

Regarding claim 1, Alber teaches a volume measuring device 42 ("pump 42 will be termed a volumetric pump", fig. 1, col. 7, lines 1-2) for measuring a volume ("total volume", col. 5, line 14) of a gas ("air-filled", col. 1, line 28) within a vessel 10 (fig. 1, col. 7, line 14), the device being arranged to:

- produce a continuous change ("continuously controlled decompression", col. 6, line 68 to col. 7, line 1) in the volume of the gas;
- measure a rate of change of pressure ("rate of depressurization", col. 8, line 68) of the gas with respect to the volume by determining incremental changes of volume ("increment in volume", col. 7, line 13) throughout the change in volume, and measuring incremental pressure changes ("desired reduction in pressure", col. 8, line 1) associated with respective volume changes ("V_E is the change in the volume of the chamber 10 caused by the pressure reduction and is

assumed to be a function of pressure", col. 8, lines 48-49), or work done during respective volume changes;

- use the measurements to determine a straight line relationship 79 (fig. 5(b), col. 9, line 14); and
- determine 78 ("derive pressure-volume pairs", fig. 5(b), col. 9, line 13) the volume of the gas from the volume changes and either the pressure changes or work done.

Regarding claim 2, Alber teaches the device according to claim 1 including a piston ("hydraulic piston formed by two interconnected fluid filled cylinders", fig. 1, col. 2, lines 15-16) arranged to produce the change in volume of the gas in a single stroke ("the invention permits the taking of a series of pressure and volume measurements as the pressure in the chamber is reduced to a predetermined value", col. 2, lines 10-12).

Regarding claim 3, Alber teaches the device according to claim 1 or claim 2 including a pressure sensor 29 ("pressure transducer", col. 7, line 18) arranged to measure the incremental pressure changes ("measuring of air pressure within the vessel", col. 6, lines 17-18).

Regarding claim 4, Alber teaches the device according to claim 3 arranged to estimate a best fit straight line relationship 79 (fig. 5b, col. 9, line 14) from the measurements.

Regarding claim 5, Alber teaches the device according to claim 3 or claim 4 wherein the straight line relationship includes first ("oscillating water level", col. 9, lines

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23-24) and second derivatives ("these points 78' spiral inward to converge at point P' ", col. 9, line 25).

Regarding claim 6, Alber teaches the device according to any claims 3 to 5 arranged to determine the volume from an intercept of the straight line relationship ("additional points are collected, the accuracy with which the line 79 can be determined increases until the intersection of this line 79 with the desired volume level L", col. 9, lines 23-25).

Regarding claim 7, Alber teaches the device according to any foregoing claim including the piston ("hydraulic piston formed by two interconnected fluid filled cylinders", fig. 1, col. 2, lines 15-16) arranged to produce the continuous change in volume ("the invention permits the taking of a series of pressure and volume measurements as the pressure in the chamber is reduced to a predetermined value", col. 2, lines 10-12).

Regarding claim 8, Alber teaches a method ("static methods", col. 2, line 50) of measuring a volume of gas ("total volume", col. 5, line 14) within a vessel ("a chamber" col. 2, line 5), the method comprising:

- producing a continuous change ("continuously controlled decompression", col. 6, line 68 to col. 7, line 1) in the volume of the gas;
- measuring the rate of change of pressure ("rate of depressurization", col. 8, line 68) of the gas with respect to [the -> a] volume by determining incremental changes of volume ("increment in volume",

col. 7, line 13) throughout the change in volume, and associated with respective volume changes, or work done during respective volume changes("VE is the change in the volume of the chamber 10 caused by the pressure reduction and is assumed to be a function of pressure", col. 8, lines 48-49);

- using the measurements to determine a straight line relationship 79 (fig. 5(b), col. 9, line 14);
- and determining the volume of the gas from the volume changes and either the pressure changes or work done ("the invention permits the taking of a series of pressure and volume measurements as the pressure in the chamber is reduced to a predetermined value", col. 2, lines 10-12).

Regarding claim 9, Alber teaches the method according to claim 8 wherein the gas is part of a di-phasic mixture ("a breathing patient", col. 2, line 2).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL LE BOULLUEC whose telephone number is (571)270-3892. The examiner can normally be reached on Monday-Thursday from 7:00 AM to 5:30 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron Williams, can be reached on 571-272-2208. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MLe 29 April 2008

/Hezron Williams/
Supervisory Patent Examiner, Art Unit 2856